NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

F A C T S H E E T
(pursuant to NAC 445A.874)

Permittee Name: Rebel Oil Company

Permit Number: UNEV93215

A. Description of Discharge

Update as of July 2008 renewal (updated information is in italics):
Location: Twenty- one currently permitted injection wells are located at or in the vicinity of Rebel Station #8 at 3225 North Las Vegas Boulevard, Las Vegas, Nevada 89030. The permitted injection wells are: RMW-1, RMW-2, RMW-3, RMW-7I, RMW-13, RMW-14, RMW-15, RMW-18, RMW-19, RMW-20, RMW-21, RMW-21, RMW-22, RMW-23, RMW-24, RMW-24, RMW-25, VE-1, SP-1, SP-2, and SP-3.
Characteristics: The injectate consists of low percentage (3%) hydrogen peroxide solution used to increase biodegradation of petroleum hydrocarbon contamination. Five thousand gallons are authorized to be injected quarterly into twenty- one wells.

Location: The single network of sixteen wells are located at 3225 North Las Vegas Blvd, Las Vegas, Clark County, Nevada 89030, in Section 18, T.20S., R62E., M.D.B.&M. (Figure 1, Location Map). The wells authorized for injection of dilute hydrogen peroxide solution are MW-2, MW-3, MW-4, MW-7I, MW-13, MW-14, MW-15, MW-18, MW-19, MW-20, proposed MW-21, VE-1, VE-2, SP-1, SP-2, and SP-3. MW-4 is authorized for injection of petroleum hydrocarbon contaminated, treated, groundwater.

Characteristics: This site is contaminated with non-chlorinated petroleum hydrocarbons, including Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE), and Total Petroleum Hydrocarbons (TPH), associated with a leaking gasoline underground storage tank. Historical free product has been recorded at this site; however, latest monitoring data did not detect any free product. The injectate at MW-4 will consist of treated groundwater from an on-site remediation system. The injectate in the remainder of the wells will consist of a dilute 3% hydrogen peroxide solution, made with dechlorinated water, with cumulative injected volume not to exceed 5,000 gallons per quarter.

B. Synopsis

Update as of July 2008:
The consultant (Broadbent and Associates) states they are currently evaluating remediation at the site and will probably be making changes in the next six months. Currently there is an onsite air sparge/vapor extraction system and offsite hydrogen peroxide injection.

Rebel Oil Company operates an active automobile fueling facility. The applicant has requested renewal of Underground Injection Control Permit, UNEV 93215. The permit was issued in 1994 as part of a groundwater remediation project, subject to a corrective actions plan, administered and approved by the Division's Bureau of Corrective Actions, designed to clean up contamination from leaking underground gasoline storage tanks at the site. Presence of dissolved non-chlorinated petroleum hydrocarbons in excess of the State and Federal action levels have been documented.

Depth to groundwater is approximately 55 feet below land surface. The contamination is most

concentrated at MW-1, which is the current pumping well. Groundwater flow is to the east to southeast. The subsurface sediments consist of gravelly sand from the surface to a depth of about 10 feet. The underlying sediments are predominantly silt and clay. The hydraulic conductivity is estimated at 0.00001 cm/sec, or 0.028 ft/day. The groundwater gradient is approximately 0.01 ft/ft.

The remediation system, as currently operating under the modified existing permit, consists of a pump and treat system and vapor extraction and sparge wells (aided by peroxide treatment). Groundwater is pumped from MW-1, treated by an air stripper, passed through two carbon canisters and then injected into upgradient well MW-4. The system is designed for approximately 10 gpm, but is currently operating under 1 gpm. MW-4 is 4 inches in diameter and 70 feet deep.
The applicant is currently injecting up to 2,500 gallons per quarter of a 1% hydrogen peroxide solution into a network of nine wells, and is requesting to continue with the injection of hydrogen peroxide solution, which will be injected through selected existing monitoring, air sparge and vapor extraction wells. The permit renewal conditions will allow a 3% hydrogen peroxide solution to be injected at no more than 5,000 gallons per quarter (three months) into an expanded network of sixteen wells. The injection is expected to provide a source of oxygen for the indigenous microbes that will enhance the in-situ bioremediation process.

Monitoring wells farthest downgradient will be utilized for the detection of potential plume migration. Because of the low volumes and rates of the proposed injection (both from hydrogen peroxide injection and the injection of the treated, pumped, groundwater) and the low hydraulic conductivity of the shallow formations, adverse affects on plume migration are expected to be negligible.

Figure 2 is a detailed site map showing the well network. The site is located near another petroleum hydrocarbon contaminated site, the Fayeghi Texaco facility, located approximately 700 east northeast, and down hydraulic gradient. This Texaco gas station is also being actively remediated and is permitted under UNEV95211. Figure 2 also shows this nearby site and the location of two City of North Las Vegas municipal wells. The GOWAN #2 well is screened from 70 feet to 435 feet, and traces of benzene and MTBE have been recently reported. Recently installed monitoring wells RMW-16 and RMW-17 are non-detect for all BETX, MTBE and TPH and the source of this contamination is currently being investigated. Presently, GOWAN wells #1 and #2 are shut down, pending full investigation results. A recently completed pumping test at GOWAN #2 suggests that flow toward the well may be along preferential, fracture enhanced, pathways. Preliminary conclusions suggest that the benzene and MTBE detected in the Municipal well most likely originated from the Rebel 8 facility.

Proposed Permit Changes: The original permit was issued for a pump and treat system. Since that time, the permit was modified several times to include injection of hydrogen peroxide, and bioproducts. Recently, the remediation system was modified to include soil vapor extraction and air sparging. The reissued permit will allow injection of hydrogen peroxide solution and continued injection of the treated groundwater (from MW-1 via stripper and carbon filtration to MW-4). A limit of 20 ppb MTBE for all injected, treated, groundwater will be added to the new permit. Volume of hydrogen peroxide allowed for injection, per quarter, will be increased to 5,000 gallons and the allowed concentration will be increased to 3%. Injection of bioproducts, surfactants or other chemicals, aside from hydrogen peroxide, is not allowed in the proposed new permit. Several monitoring wells will be added, and the hydrogen peroxide injection network will be expanded. New language in the permit will allow injection wells to be kept open for monitoring purposes, on an as needed basis, at the time active remediation is complete, and the UIC permit is canceled. The permittee has requested, and the Division concurs, that the requirement to sample for Total Petroleum Hydrocarbons (TPH) be dropped for the monitoring wells, but retained for the (treated) injectate sampling and MW-1.

B. **Receiving Water Characteristics:**

Update as of July 2008 renewal: *The most recent monitoring, performed 3/19-20/2008, by the consultant Broadbent and Associates (First Quarter, 2008 report) shows the following exceedances of regulatory action levels of contaminants in wells at the site:*

Contaminant	Action Level (µ/L)	RMW-1b (µ/L)	RMW-7i (µ/L)	RMW-8 (µ/L)	RMW-12 (µ/L)	RMW-13 (µ/L)	RMW-15 (µ/L)	RMW-22 (µ/L)	RMW-23 (µ/L)	RMW-24 (µ/L)
Benzene	**5**	7,400	1,500	-	580	1,900	54	7,000	4,900	49
Toluene	**1,000**	1,900	-	-		3,600	-	6,500	-	-
MTBE	**200**	110,000	-	340	-	-	-	77,000	140,000	-

Wells RMW-1b, RMW-22, RMW-23, and RMW-24 are on the Rebel Station #8 site, while wells RMW-7i, RMW-8, RMW-12, RMW-13, RMW-15, are offsite.

Most recent analysis of the contaminated receiving waters, from RMW-1 (Third Quarter, 1999) show the following contaminant values:

	Observed	**MCL**
Constituent	µg/L (ppb)	µg/L (ppb)
Benzene	12,000	5
Toluene	14,000	1,000
Ethylbenzene	680	700
Xylenes (total)	9,200	10,000
MTBE	44,000	N.A.

Additionally, the natural receiving water quality is relatively poor, which is typical of the shallow aquifer in the Las Vegas Valley. Nevada drinking water standard for TDS (1000 mg/l) are not met. Concentrations in the groundwater are: TDS, 1,309 mg/l.; magnesium, 155 mg/l; and manganese, 0.43 mg/l. Water will be injected into the same zone from which it is produced.

D. **Procedures for Public Comment**

The Public Notice of the Division's intent to issue a permit authorizing the facility to discharge to the ground water of the State of Nevada has been sent to the Las Vegas Review-Journal.

The Public Notice has been mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the Public Notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected state, and any affected interstate agency, the regional administrator of EPA Region IX or any interested agency, person or group of persons.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental

Commission pursuant to NRS 445A.605.

E. **Proposed Determination**

The Division has made the tentative determination to issue the proposed permit.

F. **Proposed Injectate Limitations and Special Conditions**

Update as of July 2008: *Injection is limited to five-thousand (5000) gallons per quarter of 3% hydrogen peroxide solution.*

Hydrogen Peroxide - 3% Solution with a maximum of 5,000 gallons / quarter.

No surfactant or any other additive not specifically listed, shall be used at this site unless written approval is given by the Nevada Division of Environmental Protection.

Concentrations in the treated effluent injectate will not be permitted to exceed 5 ppb benzene,

100 ppb toluene, 200 ppb total xylenes, 100 ppb ethylbenzene, 1 ppm TPH and 20 ppb MTBE. For all monitoring wells, monitoring for BTEX, and MTBE will be required, with a "monitor and report" requirement. The permit will not allow any degradation of groundwater due to injection activities.

G. **Rationale for Permit Requirements**

Verification that the injectate does not adversely affect the existing water quality, nearby municipal wells or the hydrologic regime.

Update prepared by Janet Melander
July 11, 2008

Prepared by: Karl Kanbergs
Date: January, 2000